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The effect of paracetamol on human Chang liver cells infected by different dengue serotypes based on liver enzyme activity

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Background: Paracetamol (PCM) is an effective analgesic and antipyretic when used in recommended doses. The World Health Organization (WHO) has recommended PCM as a first line antipyretic in many conditions including dengue fever (DF) or dengue hemorrhagic fever (DHF). Liver is one of the major organs affected in dengue infection. As PCM is metabolized in the liver, prescription of PCM in dengue infection may result in further deterioration of liver dysfunction. The aim of this study is to investigate the effect of PCM together with different dengue serotypes in Human Chang liver cells based on the liver enzyme activity.

Methods: The MTT assay was first used to determine the 50% cytotoxicity (IC50) of PCM on Human Chang liver cells before investigating the effect of PCM on the cells infected with dengue viruses. Human Chang liver cells were then incubated with the four dengue serotypes followed by adding the predetermined level of IC50 of PCM for 24 hours. Healthy cells (non-infected and non-treated) was used as a control. The level of aspartate transaminase (AST) and alpha Glutathione-S-transferase 1 (GSTA1) were determined in the incubation mixture.

Results: In the order of increasing AST cytotoxicity level, DENV-4 (23.5%), DENV-1 (37%), DENV-3 (44%) and DENV-2 (50%) was documented. For the non-infected cells (PCM alone), the AST level was 12%. Findings showed no significant difference in AST levels in infected cells as compared to control except for DENV-2 (<0.05) and DENV-3 (<0.05). There has been no significant difference in AST level when compared between the four serotypes. For GSTA1, the study showed no significant difference in levels of the four serotypes with 0.66 ug/ml (DENV-1), 0.64 ug/ml (DENV-2), 0.64 ug/ml (DENV-3), 0.70 ug/ml (DENV-4) and 0.76 ug/ml (non-infected) as compared to control with 1.88ug/ml.

Conclusion: There are four dengue serotypes which infect the liver cells and elevates AST, the differences in the percentage of elevation between serotypes is not significant. GSTA1 is not a suitable marker for liver cytotoxicity in dengue infection as compared to AST in our study as AST is found to be more specific.

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Ramsay-Hunt syndrome in patients hospitalized due to herpes zoster

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Background: Infavourable forms of herpes zoster, particularly affecting the organs or skin of the head and carrying the risk of serious complications are among the indications to hospitalization due to zoster. Ramsay-Hunt syndrome (RHS) is a rare type of herpes zoster. It is the third commonest reason of Bell's palsy, but little is known about general risk of RHS incidence compared to other serious manifestations of zoster and about the population with higher risk of RHS.

Methods: A retrospective analysis of clinical data of patients hospitalized in single center of infectious diseases in Wroclaw, Poland, in years 1998-2011, compared the incidence of RHS to other forms of zoster affecting head and described the population with RHS.

Results: 742 patients were hospitalized in analyzed time interval: 461 females (62,13%), 281 males (37,87%), with age range 18-101 years (average: 66, median: 70). In 346 cases (46,76%) the lesions were localized on the head (no sex or age-related differences): facial n=216 (62,42%), ophthalmic n=170 (49,13%), otic n=60 (17,34%), hairy skin n=54 (7,28%), oral n=12 (3,47%). RHS was recognized in 49 cases (14,16% of head localization, 6,60% of all hospitalized patients). There were also 11 cases of zoster affecting the skin of the auricula without RHS and 2 cases of zoster with facial nerve paralysis but without either clinical symptoms of RHS or lesions in ear region (one case of ophthalmic zoster, one case of lesions localized in occipital region). The sex difference in RHS group was comparable to group of zoster cases without RHS (p=0,9). Patients with RHS were modestly younger (average age 64, median 65 years; cases without RHS: average age 66, median 71), but the difference was statistically insignificant (p=0,1). 75,51% (n=37) of them had no potential risk factors (except age) of zoster incidence. In comparison, 64,86% of patients with ophthalmic zoster had at least single risk factor, p<0,05. Malignancies and diabetes were the most important conditions.

Conclusion: Ramsay-Hunt syndrome is rare manifestation of zoster, also among patients hospitalized due to zoster. There are no certain sex and age features or underlying conditions influencing Ramsay-Hunt syndrome occurrence.

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